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May 28, 1955

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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Science Fair Winners

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A SCIENCE SERVICE PUBLICATION

MEDICINE

Find Points to New Drugs

► NEW DRUGS that will be better than present drugs because they are specially designed to have specific effects in the body are expected as a result of a discovery by scientists at the National Heart Institute in Bethesda, Md.

The discovery is that the body has systems of "counter agents" that attack and inactivate drugs and other foreign compounds. These counter agents are contained in liver microsomes, tiny particles of the body's cells too small to be seen even with a microscope.

The research team which made the discovery includes Dr. Bernard B. Brodie, Julius Axelrod, Jack Cooper, Leo Gaudette, Dr. Bert La Du, Dr. Chozo Mitoma and Dr. Sydney Udenfriend.

Before the discovery of this function of liver microsomes, it was assumed that drugs were inactivated by becoming "enmeshed" in biochemical mechanisms which did not distinguish between drugs or other foreign compounds and substances used in the body's normal economy.

The discovery came from an earlier study of a then new compound, SKF 525-A. This compound, which lacks any activity of its own, was known to possess a remarkable ability to prolong or "potentiate" the effects of other drugs in the body. Rats tested, for example, slept ten times as long

with a barbiturate when its use was accompanied by SKF 525-A than without it. This potentiating effect was seen not only with barbiturates but also with an unrelated variety of compounds such as narcotics, muscle relaxing drugs, and even stimulants.

That SKF 525-A could slow the breakdown of such unrelated compounds was surprising and interesting to Heart Institute investigators. It suggested the possible existence of a common denominator which together in some way all of the body's different pathways of drug breakdown and makes them all open to the action of SKF 525-A. This common denominator was the liver microsome which was found to contain nearly all of the enzyme systems responsible for drug breakdown.

Liver microsomes, however, will not work to break down drugs without help. Oxygen and reduced TPN (triphosphopyridine nucleotide), an "enzyme helper" present in various kinds of chemical systems in nature, are also necessary common denominators. With the use of all three, microsomes, oxygen, and reduced TPN, many drugs are now being made to undergo in the test tube the same kind of metabolic disintegration as they would undergo naturally in the body.

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MEDICINE

Cocoon Phase for Virus?

► PARTICLES OF the virus that causes breast cancer in mice get themselves imbedded in a "sort of cocoon." Maybe this mouse cancer virus and all other viruses have life cycles, spending one part of the cycle in cocoons.

Discovery of the mouse breast cancer virus particles in what looked like a cocoon was made by Dr. Leon Dmochowski of Baylor University College of Medicine and M. D. Anderson Hospital in Houston, Tex. Dr. Dmochowski's research was begun with Dr. Cushman D. Haagensen of Columbia University, New York.

Dr. Dmochowski has made pictures of these cocoons intact and being disrupted.

If the viruses have a definite life cycle, science for the first time has pictorial proof of a great mystery: how the virus reproduces inside the tumor cell.

It appears from pictures so far made that the cancer viruses do not break up the cell which houses and nurtures them. They appear to use the cell as a virus factory and escape from it one at a time, presumably to infect other cells.

Whether they ever exhaust the cell and leave it to disintegrate is still an open question.

While Dr. Dmochowski feels that still further tests must be made before he can be absolutely sure that he is dealing with a virus, some other scientists concede that the particles are indeed the long-sought-for mouse breast cancer virus. Dr. Dmochowski readily produces cancer by injecting the core or central part of these particles (and not cancer cells) into mice.

The particles, which are the central parts of larger size particles, are spheroid in shape; and the basic units may have the peculiar property of coming together to form giant viruses. Some are 30 or more times the size of the smallest particles. Oddly enough, the small particles are much more infective than the larger ones.

The large particle has a dark center. This is interpreted to represent RNA or ribose nucleic acid, which contains the hereditary traits of the virus.

Dr. Dmochowski finds these particles only in the outer cytoplasm of the mouse breast cancer cells, never in their nuclei. They are found particularly associated with what is known as the endoplasmic reticulum, the cell's principal chemical factory, he said.

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BIOCHEMISTRY

Four Steps to Germ Destruction in Body

► FOUR STEPS in the body's complicated process for destroying invading disease germs and, perhaps, other alien cells such as cancer, have been found by scientists at Johns Hopkins University in Baltimore.

Production of antibodies, familiar to everyone who has followed the polio vaccine story, constitutes only one requirement for successful destruction of alien cells. Equally important is complement, which works with the antibodies.

Complement is a mixture of four proteins. It abounds in normal blood. Complement acts in the following four steps, the cancer society report states:

1. Two of complement's four protein components, utilizing the electrostatic double charge of calcium, are bound to chemicals on the surface of the invading cell. If charged calcium is not there, this initial reaction cannot take place, and the body cannot defend itself.

2. With doubly charged magnesium present, a third complement component further reacts with the complement-cell combination. If magnesium is not present, this defensive chemical step cannot take place.

3. The remaining complement component then reacts with the complement-cell combination, which now has gone through the calcium and magnesium-induced steps, and this final blow damages the cell.

4. The damaged cell dies and becomes a ghost, releasing the contents which had endowed it with life and function.

The studies which showed this were made by Dr. Manfred M. Mayer assisted in various parts of it by Drs. Lawrence Levin, Herbert J. Rapp, A. Alvin Marucci, Kenneth M. Cowan and Abraham G. Osler. The research was supported by the American Cancer Society, the National Science Foundation, the Office of Naval Research and the Sidney M. Cone Foundation.

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MEDICINE

Lima Beans May Give Stuff for Blood Typing

► BLOOD GROUPINGS for transfusions may be done more cheaply in the future by using substances extracted from lima bean plants. Proteins from these and other plants will combine with certain red blood cells and make them stick together, which may lead to use of the substance for blood grouping.

If the lima bean chemicals can be made to work on a practical scale, they will replace human blood serum, which is expensive and sometimes hard to get.

Studies on the lima bean serum substitute will be continued by Dr. William C. Boyd of Boston University under a three-year grant of \$20,000 from the National Science Foundation.

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GEOPHYSICS

Reliable Radio Signals

Long-distance radio communication difficulties can be overcome with new system more than 99% reliable under some conditions. Scattered radio waves are used.

► A NEW method for sending long-distance radio signals, more than 90% reliable, is being used between northern Maine and Thule in northern Greenland, SCIENCE SERVICE learned. Under some conditions, propagation is over 99% reliable.

It gives interference-free reception between points 600 to 1,200 miles apart. The system is free from ordinary atmospheric disturbances that plague shortwave users during long-distance transmissions.

Some technical details are under security wraps, but the method has been successful in over a year's use.

The new kind of radio propagation at very high frequencies over long distances has important military applications, particularly in the Arctic and Antarctic where communications are very often disturbed by auroras and magnetic storms.

Early warning radar lines such as DEW, for distant early warning, across the Arctic wastelands of northern Canada and Alaska, could use the system to signal back to the United States approach of enemy bombers over the polar regions several hours before they reached target cities.

Shortwave radio is not reliable for such purposes. Scientists rate regular shortwave channels, sending at three to 30 megacycles, as only 70% to 80% efficient because of atmospheric disturbances. Sometimes transmissions are blacked out for hours or days.

Radio signals of the new system actually come through more clearly at times when reception of shortwave becomes thus disturbed. High power, about 30 kilowatts, is required to send the signals.

Other nations, such as Norway and France, are known to be experimenting with the system. It is presumed that Russia, also, is learning to use this new type of radio transmission.

Radio waves of 30 to 40 megacycles are used, higher than those of the standard broadcast band, 550 to 1,500 kilocycles, but lower than those of commercial television, which start at 58 megacycles.

The 30 to 40 megacycle band is now used for low-power short-range transmissions, such as for Army field telephones, police broadcasts and communications by industrial companies.

Eventual redistribution of this part of the radio spectrum to cover long-range high-power use under the new system is foreseen by radio experts. Transition will be gradual, they believe.

Although the high power transmitters and receivers needed are expensive to build, the method is cheap when its reliability is considered.

The system's operation can be likened to "seeing," from hundreds of miles away, a powerful searchlight beamed into the air behind a mountain. The light beam actually goes off into space, but impurities—dust, pollen, etc.—in the air catch a very tiny portion of the rays. This light could be seen with a telescope by someone hundreds of miles away, if the exact spot to look is known.

Similarly, most of the radio frequency power in the new method is lost, but some is scattered by the lower part of the E region, a layer in the earth's atmosphere 45 to 55 miles above the surface. This portion is received hundreds of miles away by high-gain antennas aimed at the exact spot.

The system is called either forward scat-

ter, or FPIS, for forward propagation by ionospheric scatter. The method was just tested between Cedar Rapids, Iowa, and Sterling, W. Va.

U. S. armed forces have had four communication channels in operation since January, 1954, transmitting from Goose Bay, Labrador, to Sondrestrom, just south of the center of Greenland, and from there to the far northern base of Thule.

Human error and equipment difficulties have prevented measuring reliability to an exact decimal above 99%.

The scientists who first reported experimental discovery of the new type of radio propagation were D. K. Bailey, R. Bateman and G. F. Montgomery of the National Bureau of Standards, Washington, Dr. L. V. Berkner of Associated Universities, Upton, N. Y., Dr. H. G. Booker of Cornell University, Ithaca, N. Y., Nobel Prize winner Dr. E. M. Purcell of Harvard University, W. W. Salisbury of Collins Radio Company, Cedar Rapids, Iowa, and Dr. J. B. Wiesner of Massachusetts Institute of Technology.

Success of the system was first revealed at the Institute of Radio Engineers recent convention in New York.

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CERAMIC FILTER—With its 800,000,000 holes per square inch, this long white filter can strain Salk vaccine for bacteriological purity. Jack Kerns, engineer for Selas Corporation of America, which developed the filter, tests the device. Number of holes per filter is measured precisely by checking the air pressure needed to create bubbling in water.

NATURAL RESOURCES

Water Shortage This Year

State-by-state summary of water conditions in Southwest shows that supply is perilously low. Recent heavy rains have come too late.

► THE WATER supply in southwestern United States is perilously low this year. City dwellers and farmers, industries and power plants will be forced to ration their water use. There is no hope for an improved situation during 1955.

The heavy rains that have drenched areas of the drought-stricken Southwest will not materially lessen the serious water supply shortage. It is too late, officials of the Soil Conservation Service report.

Unless the Southwest receives persistent and continuous rain throughout the rest of May and all of June, the water situation will remain bad. The U. S. Weather Bureau in its 30-day forecast for mid-May to mid-June has predicted above normal rains for the drought-stricken area.

If above normal rains do fall, they will help replenish stock water and increase the stream flow in some area, but it will have little effect on the reservoir supply.

Many farmers have tried to adjust their cropping to take advantage of the early rain and runoff, but late maturing crops such as sugar beets require water principally from reservoirs.

The soil conservationists estimate that even persistent rains through June will not change the reservoir levels more than five percent. They state that although the present heavy rains will offer temporary relief and help some crops like sorghum and other important feed and cover crops, it is too late to bring the water supply in reservoirs up to normal.

Lake Mead, the largest artificial lake by volume in the world, made by the Hoover Dam on the Colorado River in northwestern Arizona and southeastern Nevada, is at its lowest point since the time of its original filling in 1938. Denver's four reservoirs are down 64,000 acre feet of water since 1954, or more than half of what they held last year.

The Northwest was saved from a similar thirst only by unusually heavy snowfalls in Oregon, Washington and Montana during April.

The current low water supply is an extension of the plight southwesterners have faced for the past three years. What makes it particularly bleak is that carry-over of water supply from year to year has been decreasing. The less water refilling the streams, rivers and reservoirs each year, the less saved for a time when it is needed. Coupled with the drought, the Southwest faces a major disaster from no water.

Each year, the water supply outlook for the western states is determined to a large degree by snow surveys made each month from December through April. Streamflow

from snowmelt gives water surveyors a good picture of how much water will be available for irrigation, power generation and municipal and industrial use.

This is the state-by-state situation given by the Soil Conservation Service from reports from Homer J. Stockwell, snow survey leader, Colorado Experiment station, Fort Collins, Colo., and Gregory E. Pearson, hydraulic engineer of the Soil Conservation Service, Salt Lake City, Utah:

Arizona—Snowmelt runoff may prove the least since 1904, and possibly the least since records began. Practically all of the snow water was absorbed by the dry mountain soils. Snow has already melted without perceptible increases in the minimum flows of the rivers. Salt River Valley is near a record low and the San Carlos project has no storage.

California—Water conditions as of April 1 are generally unsatisfactory and indicate that the water supply for 1955 will be below normal. Critical conditions are expected only in localized areas. From the standpoint of precipitation, this year appears to be the driest since 1947. If the near drought conditions should continue through another season, as has happened in the past, water conditions would become acute.

Colorado—Because of the low carry-over in small irrigation reservoirs, the statewide water supply outlook for 1955 is not much better than in 1954, which was near the lowest on record. The lack of storage will cancel expected increase in streamflow over 1954. Users should be prepared to reduce their demands for water.

Idaho—The water supply outlook for streams in northern Idaho is near normal. The southern half of the state has a poor prospect. Critical water shortages are developing in irrigated areas in the south. Carry-over storage next fall will not be adequate for 1956.

Kansas—Only rainfall of high proportion in the Arkansas Valley can improve the situation in eastern Kansas. No water is stored in the John Martin and Great Plains reservoirs.

Nebraska—Shortages of irrigation water seem virtually certain. Adequate water supply will be available only if rainfall during the summer months is well above average.

Nevada—Snow-stored water ranges from near normal in a small part of eastern Nevada to poor in the remainder of the State. Water supply will be below normal in all parts of the State.

New Mexico—The water supply outlook along the Rio Grande in New Mexico is the poorest in recent years. Streamflow is ex-

pected to be less than a year ago.

North Dakota—The water supply to irrigated areas along the Missouri River is good.

Oklahoma—Storage in the W. C. Austin Reservoir is about 12% of capacity and near one-half of average. The water supply outlook is poor.

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Orchid growers in Los Angeles and San Francisco have reported losses as high as one-third of their crop due to air pollution damage.

One method now used to empty coal cars quickly is to lift up the car and turn it over.

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GENERAL SCIENCE

"Brain" Wins Fair Award

Other top prizes for teen-age scientists' exhibits go to insect study, metallurgical project, and study on possible use of algae as world food source.

► A MECHANICAL brain that shows up humans, a colorful study of insects, a metallurgical project and a study of pond scum made to find its value as a food won four teen-aged scientists the top awards at the Sixth National Science Fair in Cleveland.

The two boys and two girls whose scientific exhibits were chosen as the best from among 136 projects set up by young scientists from throughout the nation were named at an awards luncheon by Watson Davis, director of SCIENCE SERVICE which sponsors the National Fair.

A mechanical Chinese puzzle that successfully teased the human brains of scientists, industrialists, graduate engineering students and the public at Case Institute of Technology, earned Rosemary Patricia Och, a 16-year-old junior at Bayley Ellard High School, Madison, N. J., first place among the girls exhibiting their projects in the fields of the physical sciences. The young scientist won her wish, a \$125 award of scientific equipment. Rosemary chose a communications receiver kit.

Another young lady, 17-year-old Johanna Hackman of Radford, Va., who saw more in pond scum than the usual annoyance with it, walked off with the top \$125 award among the girls exhibiting biological sciences' projects. The Radford High School senior as her prize asked for a camera and carrying case, tripod, flash and slide file case for her study of spirogyra, a fresh water alga. She attempted to prove that it has nutritive value as a possible source of food for the world's starving populations.

In the boys' physical sciences' division, Robert Scott Dunning, a senior at Norview High School, Norfolk, Va., won his \$125 "wish" award with a set-up of physics equipment and power graphs that demonstrate the Curie point, that temperature at which magnets lose their magnetism. Bob, who is 17 years old, has chosen a typewriter as his prize.

A California teen-ager who lives close to a canyon, earned a steel cabinet and Cornell drawers for an exceptionally visual exhibit of the insects found in Arroyo Seco Canyon.

Each insect collected by Vladimir Vadim Baicher, 17, of Pasadena, Calif., was shown in its habitat exactly as it appears in natural life, complete with the animal and plant foods it feeds on and its dwelling place.

Atom Stock Awards

Eight of the nation's young scientists are now owners of approximately \$125 each of stock in the Atomic Mutual Development Fund. They won these shares, in organizations in which they may some day be

holding research or executive positions, through awards from the Young Presidents Organization for exhibits at the Sixth National Science Fair.

The YPO Merit Awards for the two projects exhibiting the best commercial possibilities went to Henry Edward Karrer, 17, Clovis Union High School, Clovis, Calif., for an exhibit on a TV-microwave antenna, and to Nancy de Cou Cowell, 18, Valley City (N. D.) High School, for an exhibit of a vertical bed.

For projects exhibiting the finest craftsmanship, Rodney Kip Riddle, 17, of South Side High School, Fort Wayne, Ind., who exhibited the fifth dimensional analogue of a binomial cube, and Sheila Evans, 16, of Aquinas Academy, Tacoma, Wash., with an exhibit on uranium, each won an award.

Awards for exhibits showing the most creative thinking went to Bette Marie Coder, 17, of Northwestern High School, Hyattsville, Md., for her exhibit on the effect of pregnancy on mammary cancer and to Philip Jay Pochay, 16, of Lyons Village School, Lyons, Ohio, for his exhibit on the nature of a magnetic field.

For projects showing the most advanced scientific thinking, awards went to Douglass Gray Saunders, 17, of Oak Ridge (Tenn.)

High School, for his exhibit on geotropism, and to Carol Irene Hawkins, 17, of So. Charleston (W. Va.) High School for an exhibit on coal microscopy, a new tool for coal research.

Other NSF Winners

Winners of the second place wish awards amounting to \$75 in scientific equipment of their own choosing are: Carol Irene Hawkins, 17, So. Charleston High School, So. Charleston, W. Va., Coal Microscopy—a new tool for coal research; Evelyn La Heist, 15, Kearny High School, San Diego, Calif., A Few Protozoa and Their Way of Life; Henry Edward Karrer, 17, Clovis Union High School, Clovis, Calif., TV-Microwave Antenna; James Ellingboe, 17, Pierre S. Du Pont High School, Wilmington, Del., Spontaneous Formation of Amino Acids Under Possible Primitive Conditions; Albert Aube Jr., 16, Notre Dame High School, Berlin, N. H., Experiments With Hamsters; and Douglass Gray Saunders, 17, Oak Ridge High School, Oak Ridge, Tenn., Geotropism.

Winners of the third place wish awards, amounting to \$50 in scientific equipment of their own choosing are: Bette Marie Coder, 17, Northwestern High School, Hyattsville, Md., The Effect of Pregnancy on Mammary Cancer; Anne Hoereth Lugar, 15, Shortridge High School, Indianapolis, Ind., Development of a Chicken, Using a Home-made Incubator; James Michael Holmes, 17, Hagerstown (Ind.) High School, A Method to Measure the Sun's Diameter; Warren John Kelley, 19, Kennett High School, Conway, N. H., Electric Brain; Thomas H. Coblenz Jr., 18, Salina (Kans.) Senior



WIN ATOM STOCK — Winners of the Young Presidents Organization Merit Awards are shown with fair officials and YPO executives. Left to right are: Kip Riddle, Douglas Yoder, Sheila Evans, Harry Royal, Cleveland fair director, Carol Hawkins, H. E. Cbiles, Nancy Cowell, Watson Davis, Douglass Saunders, Philip Pochay and Edward Karrer. The eighth winner, Bette Coder, is not present. The teen-agers were each given approximately \$125 worth of stock in the Atomic Mutual Development Fund.

High School, Reptiles; and Richard Leroy Jorandby, 16, Grafton (N. Dak.) High School, Mammalian Skull Structure.

Winners of the fourth place wish awards, amounting to \$25 in scientific equipment of their own choosing are:

Elizabeth Annette Moak, 18, Neville High School, Monroe, La.; Sheila Evans, 16, Aquinas Academy, Tacoma, Wash.; Kay Marie Cowan, 17, Bessemer (Ala.) High School; Catherine Ruth Beal, 17, Little Rock (Ark.) Central High School; Janice C. Kearney, 17, Grafton (N. Dak.) High School; Alice M. Nelson, 15, Ivanhoe (Minn.) High School; Judith Agnes Davenport, 15, Chattanooga (Tenn.) High School; Lydia Sue Shipe, 16, Central High School, Fountain City, Tenn.; Margaret Edna Lenderking, 17, Martinsville (Va.) High School; Richard R. Sommerfeld, 18, Tucson (Ariz.) Senior High School; Harold James Cromack, 16, Farmington High School, Unionville, Conn.; Stewart Abel, 18, Miami (Fla.) Senior High School; Alvin McKinnon Fields, 17, Brown High School, Atlanta, Ga.; George James Kelso Jr., 17, Valparaiso (Ind.) High School; Kent Bradley, 15, Avon High School, Dan-

ville, Ind.; Robert W. Shantz, 17, Roosevelt High School, St. Louis, Mo.; Charles William Canada, 18, Guilford (N. C.) High School; Jerome Duane Anderson, 17, Minot (N. Dak.) High School; Stephen E. Dubin, 17, Overbrook High School, Philadelphia, Pa.; Richard Hudson Palmer, 14, Chattanooga (Tenn.) High School; Winston Stanley Marshall, 18, Isaac Litton High School, Nashville, Tenn.; John Edward Schmidt, 17, Port Washington (Wis.) High School; Gary K. Ackers, 15, Berkeley (Calif.) High School; James Berg, 17, Ishpeming (Mich.) High School; Beckwith Horton, 17, Sumner High School, Kansas City, Kans.; Leonidas Judd Betts Jr., 17, Fuquay Springs (N. C.) High School; John Cornelius Roan, 18, LaSalle Academy, Providence, R. I.; George H. Birkett, 17, Arlington Heights High School, Fort Worth, Texas, and Carl Manfred Hakanson, 18, Martinsville (Va.) High School.

The National Science Fair is conducted annually by Science Clubs of America, administered by SCIENCE SERVICE. The 1956 event will be held next May in Oklahoma City, Oklahoma.

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FAIR EXHIBITS — Teen age scientists show their projects at the Sixth National Science Fair in Cleveland.

Left, from top to bottom, are: Evelyn La Heist, showing protozoan life; Rosemary Ocb with her prize winning mechanical brain; Albert Aube, Jr., showing principles of heredity; Anne Lugar with her chicken-egg incubating demonstration.

Middle, from top to bottom, are: James Ellingboe, making amino acids; Carol Hawkins, demonstrating coal microscopy; Richard Jorandby, showing mammal skull structure, and Edward Karrer with his TV microwave set-up.

Right, from top to bottom, are: Douglass Saunders, demonstrating geotropism; Vladimir Baicber with his insect survey; Thomas Coblenz with his collection of reptiles, and Robert Dunning showing how to determine a Curie point.



MILITARY STRATEGY

Oil Lines Vulnerable

► ALL-OUT WAR would immediately peril the free world's oil supply because American pipelines are easy game for an enemy, the American Petroleum Institute was warned.

Cost of protecting the pipelines and installations becomes a secondary factor. A military oil line can repay its entire cost on the first day of wartime operation, two oil experts reported.

The country should be prepared to take the following steps:

To pump backward if need be, to demolish our own lines completely as a last resort if they are threatened to be overrun, and to destroy the fuel in the lines.

"This would mean a complete job—not merely breaking the line in a few places and blowing up the stations and farms, but taking such measures as pumping slugs of concrete or heavy mud into the lines at irregular intervals, loading the lines with contaminants to prevent later use and taking out major river crossings," they said.

C. B. Lester of the Mid-Valley Pipeline Co., Longview, Tex., and H. T. Chilton Jr., of the Service Pipe Line Co., Tulsa, Okla., urged realistic thought and action to insure transportation of military fuel in emergency periods.

There are three kinds of installations in a pipeline system, such as the Big Inch and Little Big Inch: the pipelines themselves, the pump stations and the tank farms. Prerequisites for protection were given.

The pipelines are relatively safe from bombardment since they are underground, but anyone with a shovel and a stick of dynamite can shut down a long stretch of

line. Such measures as security guards, fencing, air and ground patrols, monitoring instruments and camouflage were suggested. Stockpiling of pipes, especially for river crossings, would enable quick repair, they said.

The pumping station, a heavy concentration of valuable equipment, can be defended against sabotage, but is vulnerable to bombardment. In anticipation of an all-out war these stations should be shielded by concrete and sandbags, partly buried, camouflaged, and power supply should come from fuel in the pipeline to make it independent of outside failures. Stockpiles of engine driven pumping units are a must.

The tank farm is a large, easy to hit installation. Strafing or bomb splinters could set an oil tank on fire. Strengthening sabotage defenses, partly burying and shielding the tanks against near misses were suggested.

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BOTANY

Too Much of a Food Halts Sick Cell Growth

► IF A diseased plant cell, such as cancer-like crown gall, is fed too much of a food it normally feeds on, its growth will be halted.

Evidence to show that diseased plant tissues cannot cope with an overabundance of normal food items was uncovered at the University of Wisconsin by Drs. A. J. Riker and A. C. Hildebrandt.

Experimenting with crown gall, a dis-

eased form of plant growth that starves out normal cells, the Wisconsin scientists found that an excess of amino acids or vinegar-like acetic acid, added to the gall's diet, slows and stops growth. This and other experiments in growth-inhibiting diet factors have led the Wisconsin scientists to conclude that diseased cells are unable to "take or leave alone" a super-abundance of some food elements.

To aid their study, the Wisconsin doctors, together with research assistant W. H. Muir, devised a method whereby they grow strains of plant tissues from a single cell.

Using these "racially pure" colonies of cells from such plants as the sunflower, tomato and tobacco, normal or diseased growth can be controlled. To do this, the scientists subject the cells to carefully defined chemical diets, changes in temperature, the addition or subtraction of acid or alkaline to the environment or by adding drugs to the culture.

In this manner, the scientists have also found that some antibiotics inhibit crown gall development while others kill the healthy tissue. Temperature too has been found to be a factor in the case of the tobacco mosaic virus. Drs. Riker and Hildebrandt found that virus infected tissues grew best at temperatures between 75.2 degrees Fahrenheit and 82.4 degrees, while healthy tissue grew well at temperatures between 96.8 and 98.6 degrees Fahrenheit.

The scientists reported their findings to the American Cancer Society, which is supporting the studies.

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Increased activity of the adrenal, such as apparently takes place after stress or injury, promotes a greater combustion of protein in the body.



MEDICINE

Stop Frothing at Mouth With Alcohol

► GIVING THE patient alcohol vapors to inhale will stop frothing of the mouth which sometimes becomes a serious complication during operations, Dr. Ruth Weyl, anesthesiologist, of the Chicago Medical School and Mount Sinai Hospital, Chicago, reported at the meeting of the Illinois State Medical Society in Chicago.

The mouth frothing comes when fluid collects in the lungs and starts foaming. The danger is that foam blocks the small bronchi, or air passages, in the lungs. This causes a lack of oxygen and puts increased pressure on the artery serving the lungs.

The alcohol vapor apparently stops the foaming action.

Of the seven cases Dr. Weyl reported, two had been operated on for heart abnormalities, two for cancer, one for a stomach obstruction, one for a hysterectomy and one for sterilization.

Acute heart attacks were complications in three cases, the heart of one stopped during operation and another developed a respiratory obstruction.

"In all seven patients the response to the treatment seemed dramatic," Dr. Weyl said. "The output of foam stopped, the color improved and the acute suffocation due to oxygen want could be avoided."

The frothing, in each instance, was eliminated in about 20 minutes.

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METEOROLOGY

No Large-Scale Effects From Seeding Clouds

► NO LARGE-SCALE effects from seeding clouds were discovered by New York University scientists who reported on the most extensive experiments to influence weather ever made.

Dr. Jerome Spar, the meteorologist who directed the "Project Scud" studies, said they were aimed at finding out "once and for all" if artificial cloud seeding could influence developing storms, by increasing or decreasing their intensity, or by changing their direction.

"The most careful statistical evaluation," Dr. Spar said, "lent no support to the theory that seeding can make, break or change a storm in a big way." There may have been changes so small that they were not detected, he said.

During nine months in 1953 and 1954, 30 tons of dry ice and 250 pounds of silver iodide were thrown into the atmosphere between Florida and Massachusetts on 18 occasions, chosen by chance. In 19 other cases, also chosen at random, no seeding was done. The seeding and non-seeding situations were paired, and results compared.

The pairing system and conducting experiments over two winters insured against results being affected by freak weather, Dr.

Spar said. The East Coast was selected for the experiments because storms are spawned in that region quickly and violently.

Times for the missions, both seeding and non-seeding, were selected on the basis of forecasts promising cyclogenesis, or storm development.

The study was called Project Scud after the type of low-flying gray cloud associated with cyclogenesis. It was sponsored by the Office of Naval Research and information on the project was classified until recently.

Science News Letter, May 28, 1955

NUTRITION

Concentrated Juices Eliminate Refrigerator

► KEEPING CONCENTRATED juices in the refrigerator may be a thing of the past.

A "superconcentrated" grape juice and a "superconcentrated" apple juice have been developed that can be kept on the pantry shelf for at least a year without losing flavor or becoming spoiled. The fact that the juices can be stored without refrigeration is seen as cutting the cost of such juices for the housewife.

Products of the U. S. Department of Agriculture's Eastern Utilization Research Branch at Wyndmoor, Pa., the super juices are made by processing fresh fruit juice to "strip it" of its flavor essence. It is then concentrated and the essence restored.

The secret of the super juices' storage capacity is that they are packed at 180 degrees Fahrenheit and then cooled quickly. In this manner they can be stored in glass or tin equally as well.

Science News Letter, May 28, 1955

INVENTION

Invention to Improve Titanium Recovery

► BETTER AND safer production of titanium appears possible with the granting of a government patent for a new method of recovering large, pure titanium crystals.

Recovery of the substantially pure titanium metal is based on the inventor's discovery that large crystals can be deposited on a heated surface from a liquid bath containing unstable halides, such as titanium dichloride or titanium dibromide. Julian Glasser of La Grange, Ill., the inventor, claims that crystals collected by this process are relatively large, well in excess of 100 microns in diameter. Their increased size thus makes them more stable to air, oxidizing gases and other reactants.

The production of the light and strong metal has been difficult and hazardous in the past because of titanium's habit of combining with both the oxygen and nitrogen in the air.

The titanium recovery method was granted patent No. 2,706,153. Mr. Glasser assigned his patent rights to the Kennecott Copper Corporation of New York, N. Y.

Science News Letter, May 28, 1955

IN SCIENCE

GEOPHYSICS

Predict Quantities of Earth's Rare Isotopes

► CALCULATION OF which of the earth's rare isotopes were present when the earth was formed and which have been formed by cosmic ray bombardment since then was made in Caracas, Venezuela, by Dr. Serge A. Korff, physicist at New York University.

Isotopes are varieties of the same chemical element having slightly differing weights. The proportion of the existing isotope formed by cosmic rays, Dr. Korff reported to the South American Congress of Chemistry meeting, tells whether the isotope was present when earth was "born."

Of the eight rare isotopes he studied, only helium three, tritium and carbon 14 were found to have been produced entirely by cosmic rays. Carbon 14 is the valuable isotope by which archaeologists date remains of once-living things, human and animal bones, plants or fossil-containing rocks.

Since earth's formation, Dr. Korff calculated, cosmic rays have produced a thousand billion atoms of tritium in every cubic centimeter of air. Tritium is the triple-weight isotope of normal hydrogen and disintegrates into helium three, a rare isotope of helium weighing three-fourths as much as normal helium.

Since there are now only about ten million atoms of helium three in each cubic centimeter of the atmosphere, or one three-thousandth as many as have been produced in the earth's history, the rest have escaped into space.

Only very small proportions of the rare isotopes of sulfur, silicon, aluminum, sodium and magnesium were produced by cosmic ray action, Dr. Korff's calculations showed.

Science News Letter, May 28, 1955

TECHNOLOGY

Radiation Detector Works From Hypodermic

► A RADIATION detector that can be placed in living flesh in a hypodermic needle was revealed.

The counter could be used in connection with radiation treatment of cancer, and in tracer experiments on living subjects.

Components of the device are small enough to fit in a case 1 1/4 inches in diameter and 5 1/4 inches long, David T. Williams of Battelle Memorial Institute told a meeting of the American Institute of Electrical Engineers in Columbus, Ohio.

Cadmium sulfide crystals are used in the conduction-type counter, sensitive to beta particles.

Science News Letter, May 28, 1955

SCIENCE FIELDS

PUBLIC HEALTH

AEC Reports Fall-Out From Nuclear Tests

► THE TOTAL radioactive debris from all A- and H-bomb explosions between 1951 and Jan. 1, 1955, falling out on the United States is low when compared to the radioactivity normally present in the earth's crust, two Atomic Energy Commission scientists said.

The average value of the accumulated fall-out is 61 millicuries per square mile, Drs. Merrill Eisenbud and John H. Harley reported in *Science* (May 13). It varies from a figure of 21 in Arizona to 120 in New Mexico.

They compare this total for artificial radioactivity added to the atmosphere to that contributed by the naturally occurring radium 226, which varies from 100 to 1,000 millicuries per square mile.

A millicurie is one-thousandth of a curie, the unit by which radioactivity is measured, and equals 37,000,000 atomic disintegrations per second.

Drs. Eisenbud and Harley also reported that the amount of radioactive strontium from fall-out is "minute" compared with radioactivity usually present in the earth's surface.

Srontium 90 is of particular interest because, being chemically similar to calcium, it may be deposited in human bone. Its half-life, the time required for its radioactivity to drop to one-half of the original value, is 25 years.

Science News Letter, May 28, 1955

SURGERY

Operate on Heart Ten Hours Before Baby Born

► SUCCESS IN a heart operation performed ten hours before the patient gave birth to a baby has been reported.

The operation consisted in opening the mitral valve between the left auricle and the left ventricle.

It is the first such case reported, the doctors stated in the *British Medical Journal* (May 14), though the feasibility of the operation at all stages of pregnancy has previously been suggested.

The patient was a 35-year-old woman. The baby, born alive and weighing eight pounds, four ounces, was her ninth.

Drs. T. C. J. O'Connell, surgeon, and Risteard Mulcahy, heart specialist, of St. Vincent's Hospital and Coombe Lying-in Hospital, both in Dublin, report that the patient seems in "quite good" general condition and is leading a normal active life as she was before the start of her last pregnancy.

The patient had no history of rheumatic fever, which might have damaged her heart, and had had no trouble with her previous pregnancies nor had she been told there was anything wrong with her heart.

Decision to perform the heart operation as an emergency was made when she came to the hospital in labor with considerable trouble breathing, a persistent cough and blue color. She had had the cough and increasing distress on exertion for some time but had failed to report anything abnormal when she was at the clinic during her pregnancy.

She was given penicillin, digoxin for the heart, sedatives, morphine, aminophylline and streptomycin, but in spite of this her condition got worse and the doctors feared fluid would form in the lungs.

So they performed the heart operation and 10 hours later her baby was born without difficulty or distress to her.

Science News Letter, May 28, 1955

MEDICINE

Anti-Rheumatism Drug Giving Good Results

► GOOD RESULTS with one of two recently announced anti-rheumatism drugs were reported by Drs. Jack R. Dordick and Edward J. Gluck of Beth Israel Hospital, New York, in the *Journal of the American Medical Association* (May 21).

The drug, first named metacortandrocin, is now called prednisone and trade-named Meticorten by its manufacturer, Schering Corporation of Bloomfield, N. J.

Weight for weight, it is about four to five times more potent than cortisone or hydrocortisone, the New York doctors found in trial of it on 15 patients. Of these, 12 had active rheumatoid arthritis and one each had systemic lupus erythematosus, active rheumatic heart trouble and acute gouty arthritis with chronic gouty deposits.

Lessening of complaints and disappearance of spontaneous joint pain usually took place within 24 hours after the drug was started. In about the same time joint or muscle stiffness, particularly that on awakening in the morning, grew less and patients felt good.

Within a few days, muscle and joint pain or stiffness had cleared and at about this time function of muscles and joints improved. Patients had little or no distress or discomfort in getting dressed, washing or eating. Walking improved in seven of 12 patients and three of them discarded canes or crutches by the end of the second week.

The drug proved effective both as an anti-rheumatic and an anti-inflammatory agent.

Side effects were less than with cortisone or hydrocortisone. Patients who had become refractory to these hormone drugs could be transferred to prednisone treatment with "marked benefits."

Science News Letter, May 28, 1955

MEDICINE

Vacuum Pack Method to Improve Eye Banks

► EYE BANKS will give better service in future, thanks to a vacuum pack storage method announced by two Army doctors in the *American Medical Association's Archives of Ophthalmology* (April).

The method is for storing pieces of cornea, which is the clear covering over the iris and pupil of the eye. When the cornea has been damaged by disease or accident, eyesight can be restored, if the eye is otherwise unharmed, by a transplant of undamaged cornea.

Storing corneas for some time without damage has been difficult in the past. Because fresh corneas are not always available, there has been need for stored ones.

By the new method, the corneas are dehydrated and vacuum packed in glycerine and stored at room temperature. Entire corneas from cats' eyes have been preserved by this method as long as four months. When taken out of storage and transplanted, they have remained clear for as long as 10 months.

In some cases it was hard to tell the normal eye from the repaired one.

The method was developed by Lieut. Col. Joel N. McNair and Col. J. H. King Jr. of Walter Reed Medical Center, Washington, D. C.

Science News Letter, May 28, 1955

TECHNOLOGY

Sodium Reactor Heat Offered for Sale by AEC

► HEAT THAT will be produced by splitting atoms of the sodium graphite reactor now under construction at a site 30 miles northwest of Los Angeles is being offered for sale by the Atomic Energy Commission.

Public, cooperative or private organizations can submit bids for the heat from the Sodium Reactor Experiment being built by North American Aviation, Inc. It is one of the five reactor systems with which the AEC is currently experimenting in its program for development of economically competitive nuclear power.

As required by the Atomic Energy Act of 1954, the AEC will give preference and priority to public bodies and cooperatives in contracting for disposal of the heat energy from the sodium-cooled reactor.

Heat generated will be removed by a primary liquid sodium circuit that will become radioactive passing through the reactor core. Heat in the primary system will be transferred in an intermediate heat exchanger to a secondary sodium system that will not become radioactive.

Peak heat load of the reactor will be about 20,000 kilowatts, permitting generation of approximately 7,500 kilowatts of electricity. Proposals should be submitted before June 13.

Science News Letter, May 28, 1955

ASTRONOMY

Saturn in Southern Sky

One of the longest total eclipses ever seen will occur in June but it will not be seen in the United States. Stars of early summer shine brightly.

By JAMES STOKLEY

► IN THE history of astronomy, the month of June, 1955, will doubtless be recorded for one of the longest total eclipses of the sun ever observed.

With many eclipses, which astronomers make great efforts to observe, the sun is hidden behind the moon for only two or three minutes. This one, on June 20, will last for as much as seven minutes, eight seconds. One of the best places to see it will be in the Philippines, and many astronomical expeditions have already set their instruments at points of vantage.

Unfortunately, all of this occurs while the sun is below the horizon for the entire Western Hemisphere, so nothing will be observed in the United States and Canada.

We will, however, see the fine display of early summer stars that June evenings bring, with the planet Saturn shining brightly in the south. Jupiter is also visible low in the west just after sunset.

These are shown on the accompanying maps, which depict the heavens as they look about ten o'clock, your own kind of standard time, at the beginning of June, and an hour earlier at the middle of the month.

Saturn in Libra

Saturn is seen in the constellation of Libra, the scales, about half way between two bright stars: Antares, in Scorpius, the scorpion, and Spica, in Virgo, the virgin. Saturn is a little brighter than either of the stars, but not as bright as Vega, in Lyra, the lyre, high in the east.

Just below Vega is the Northern Cross, part of Cygnus, the swan, in which is the star Deneb. To the right can be seen Altair, in Aquila, the eagle.

Second brightest of the stars now visible is Arcturus, in Bootes, the bear-driver, high in the south, above Virgo. Somewhat fainter, although still rating as first magnitude on the astronomical brightness scale, is Regulus, in Leo, the lion, seen in the west above Jupiter.

To the right of Jupiter we find Pollux, in Gemini, the twins. This star also is of first magnitude, but because it is now so close to the horizon, much of its light is absorbed by our atmosphere, which makes it look much fainter than if it were seen high in the sky.

The same is true to an even greater extent for Capella, in Auriga, the charioteer, which is shown still farther to the right,

practically on the horizon. Now it gives but a slight intimation of its brilliance on winter evenings, when we can see it directly overhead.

The planet Mars, far away and faint, of the second magnitude, is also in Gemini, the twins, but below the horizon for the times of the maps. Venus is now a morning star, visible low in the east just before sunrise.

Mercury cannot be seen at all in June. On the 16th it swings between the sun and earth, reaching the position called inferior conjunction.

The eclipse on June 20, local time, is the first of three this year, of which two are eclipses of the sun and one of the moon. A solar eclipse occurs when the moon comes between sun and earth; while one of the moon happens when the earth comes between that body and the sun, thereby cutting off its illumination.

It so happens that the average distance of the sun (about 93,000,000 miles) is about as many times farther than the moon (240,000 miles) as the sun is bigger than the moon. Thus, as we see them in the sky, they appear approximately the same size. The distances of both these bodies vary.

The sun, for example, is about 3,000,000 miles closer in January than in July; while the moon's distance may be as little as 222,000 miles, or as much as 252,000 miles. Both, of course, change in apparent size with distance, appearing largest when closest.

If a solar eclipse occurs when the moon is farthest—and smallest—at the same time that the sun is nearest—and largest—the former is so small that it fails by far to cover up the solar disc. Instead, a ring of light appears around the dark moon, and this is called an annular eclipse. One of

these will occur Dec. 14, visible in the region of the Indian Ocean.

On the other hand, if the eclipse happens when the sun is farthest and the moon nearest, it will be total, and the sun will be covered for a relatively long time. Also, the place on the earth where it is visible has an effect.

If one sees it from the tropical regions, so that the sun is directly overhead at eclipse time, the observer is a little closer on account of the bulge caused by the earth's curvature, and the moon seems still bigger.

The sun is farthest from the earth about July 4. If an eclipse occurred then, with the moon at perigee (nearest the earth) and it were visible from a point in the tropics with the sun at the zenith, we would have the longest possible total eclipse, lasting about seven and a half minutes.

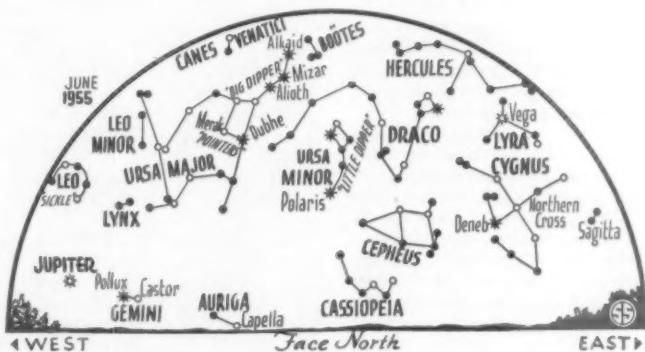
Longest Eclipses

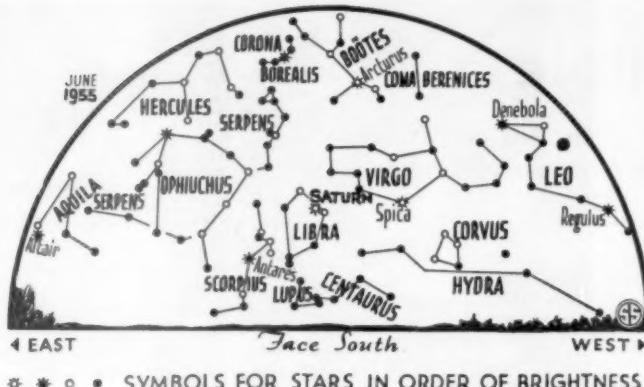
Probably this exact combination of circumstances has never occurred. Even as close an approximation to them as to give a totality of as much as seven minutes is exceedingly rare. It happened June 8, 699 A.D., with an eclipse track that passed across Brazil, which was probably not seen by any astronomers!

It happened again on June 13, 717, when the eclipse was just one second shorter than that in 699, 15 seconds over seven minutes instead of 16 seconds. Skimming into the rare, over seven-minute class was the eclipse of June 25, 735 A.D., which lasted seven minutes and one second, passing over the Indian Ocean and northern Australia.

Not until 1937, was there another eclipse longer than seven minutes. That was on June 8, 1937, when the sun was hidden for seven minutes, four seconds, the eclipse track traversing the Pacific Ocean.

Unfortunately, there was no land at the middle of the path, where it lasted for the maximum time. Some astronomical groups went to Canton Island, at the western end of the path, where the duration was about three minutes, and others to Peru, at the





* * * SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

eastern end, where the total phase was still shorter.

However, two astronomers, Dr. John Q. Stewart of Princeton, N. J., and the writer, were close to the middle of the path, on board the S.S. Steelmaker, en route from Hawaii to Panama, and there we saw it last for seven minutes six seconds, setting a record for the duration of totality observed. The extra two seconds was picked up due to the ship's motion.

After an interval of a little over 18 years, called a Saros, an eclipse repeats itself, either north or south of its previous track, and about a third of the earth's circumference to the west. Thus this June's eclipse is the repetition of the one that Stewart and I saw from Mid-Pacific in 1937, and this time there is land where totality lasts for seven minutes near Manila in the Philippines.

The actual point of longest duration is farther west, in the South China Sea. Viet Nam and Thailand will also see it, but for a little less than seven minutes.

The path of totality, over which the total eclipse may be seen, starts, as the sun rises, in the western Indian Ocean, off the coast of Somaliland. It is more than a hundred miles wide and goes northeast, crossing Ceylon and the Bay of Bengal before it reaches the Indo-China peninsula. Then it goes eastward, across the South China Sea and the Philippine island of Luzon, before it curves to the southeast. It leaves earth a little north of the Fiji Islands, as the sun is setting there.

Along this path, wherever it is clear, all the magnificent phenomena of a total eclipse of the sun will be seen.

As the moon completely covers the disc of the sun, the solar corona will flash into view. Only at the time of a total eclipse can this been seen at all with the naked eye, or observed in its entirety even with instruments. Over a larger area, covering most of southern Asia, northern Australia and the islands to the north, there will be a partial eclipse.

Celestial Time Table for June

June EST

- | | |
|--------------|--|
| 3 3:40 a.m. | Moon passes Saturn. |
| 4 10:00 p.m. | Moon farthest, distance 252,400 miles. |

- | | |
|---------------|---|
| 5 9:08 a.m. | Full moon. |
| 13 7:37 a.m. | Moon in last quarter. |
| 16 1:00 a.m. | Mercury between sun and earth. |
| 18 1:51 p.m. | Moon passes Venus. |
| 19 9:00 a.m. | Moon nearest, distance 222,400 miles. |
| 21 6:23 a.m. | New moon, total eclipse of sun visible in Asia. |
| 21 11:32 p.m. | Moon passes Mars. |
| 22 7:07 a.m. | Sun farthest north, beginning of summer in Northern Hemisphere. |
| 22 7:16 a.m. | Moon passes Jupiter. |
| 30 7:16 a.m. | Moon passes Saturn. |

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, May 28, 1955

PSYCHOLOGY

Negro Babies Aware of Race Differences at Two

EVEN AT the early age of two years, Negro children have become aware of their difference from whites and their behavior on tests is affected by this awareness.

This early consciousness of race was revealed in the course of repeated testing of Negro babies to compare their development with that of white infants.

The testing of Negro babies was done by a white examiner in New Haven. The babies belonged to a low socioeconomic group. Results were reported by Drs. Benjamin Pasamanick and Hilda Knoblock of the Johns Hopkins University, Baltimore, Md., in the *Journal of Abnormal and Social Psychology* (May).

No significant differences in either physical growth or behavior development were revealed by the tests of Negro and white babies during the first 18 months.

In the tests given at two years, a difference did show up. Although in general the growth of the Negro babies continued at the same rate as for whites, their language development dropped down.

They were not retarded as compared to the performance of white babies, but development in this field was slower than in other fields of behavior or motor achievement.

Analysis pinned the slowing down to the field of verbal responsiveness. The mother of one Negro child provided a clue to the

discrepancy, explaining it was the examiner's white skin that kept the child silent. The mother's explanation was supported by the fact that the children scored high enough on the understanding of speech.

"The awareness of racial differences apparently occurs much earlier than has been previously demonstrated," the scientists conclude. This awareness plays an important part in affecting mental test scores and should be considered in making any interpretations of racial differences.

Science News Letter, May 28, 1955

ENTOMOLOGY

Cockroach Survives by Adapting to Temperature

AS ANY householder knows, the cockroach is one of the peskiest little critters to eliminate.

Cockroaches, particularly the young ones, adapt readily to temperature changes, Dr. Paul Dehnel and Dr. Earl Segal, zoologists of the University of California at Los Angeles, have found.

That may be why they are hard to eliminate.

The researchers experimented with cockroaches that had led a sheltered life. The insects had been kept at a constant temperature of 80 degrees Fahrenheit for three generations.

Then by subjecting the roaches to various temperatures somewhat lower than 80 degrees for a week and measuring their oxygen consumption, the investigators were able to tell how the insects step up their life processes to compensate for environmental changes.

They found that the nymphs or young cockroaches adapt readily to such changes. Adults were somewhat slower. Roaches are in the nymph stage for three or four years and may survive two additional years as adults.

This compensatory mechanism in the young may be a factor that enables roaches to survive in such large numbers under all sorts of conditions the world over. It has generally been thought that insects are relatively lacking in ability to compensate for such temperature changes.

Science News Letter, May 28, 1955

Understanding Yourself

By Dr. Ernest R. Groves

This inspirational book, now in its well-merited 8th printing, has helped thousands to live more wisely, more fully, more happily, more effectively—in the best sense, more profitably; for a thorough understanding of self is the very bedrock foundation on which to build for peace of mind and sound mental health.

"The attempt of the book is to provide means by which the reader can come to a better understanding of himself. All emphasis is on the utilization of one's mental and physical equipment in such a way that happiness and efficiency may be realized."—Scientific Book Club.

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GENERAL SCIENCE

U.S. Cuts Book Role

Two Government agencies tighten up their distribution of do-it-yourself books. Depopularization of research findings affects flow of information to public.

By HOWARD SIMONS

► THE GOVERNMENT is getting out of the how-to-do-it book business. Informative and inexpensive Government-published books and pamphlets are being withdrawn from further publication or re-edited.

One such circular, "Care and Repair of the House," a Government Printing Office best-seller for 14 years, is being discarded. Although its sales are the healthiest in its history, the 60-cent how-to-do-it guide for homeowners will not be reprinted because the Department of Commerce, issuing agency, feels it is competitive with privately published books.

Now, with only a few hundred copies left in Government stock, the public will have to get it from McGraw-Hill, New York publishers, who are readying a revised, lengthened and heavily illustrated edition of it. (See SNL April 21, p. 323.)

Because the do-it-yourself pastime is becoming more and more popular with the public, it is becoming less and less popular with the Government.

How-To-Do Tabu

Helpful hints, generalizations and suggestions by the men responsible for much of the work and many of the Government published how-to-do-it books are no longer permitted. Scientists at the National Bureau of Standards in Washington are being told unofficially that they must stick to the scientific line.

"Popularizing science is not a primary function of our department," Dr. Allen V. Astin, director of the Bureau, told SCIENCE SERVICE. "The Bureau is a service agency to the nation's scientists and engineers. We are trying to make sure that with the limited funds available, we concentrate our efforts on our primary purpose, standards activities."

"The only area in which we would generalize," he stated, "is strictly in weights and measures, which is so uniquely our responsibility."

This means that in the future, findings by the Bureau's researchers will be published as technical and scientific reports.

Already, a Government publication is being re-edited to conform with the tightening up program. Circular 506, entitled "Automobile Anti-freezes," has been allowed to run out of stock without being reprinted at the Government Printing Office while it gets a depopularization face lift.

The anti-freeze circular contains information such as when a car owner should put anti-freeze in his vehicle and when he

should take it out. These and other suggestions like them, now in the tabu class of do's and don'ts, are considered out of the Bureau's area of responsibility.

Although few other books will be pulled from the shelves and re-written to delete the popular information, Dr. Astin said that "essentially what will happen is that as they get out of date, they will not be re-issued."

He emphasized, however, that in the move to service scientists and engineers directly, rather than the public, "there will be no withholding of information."

If the home owner in the United States finds himself deprived of Government-published how-to-do-it books, his wife is faring no better.

Any hopes she now entertains to receive continuing up-to-the-minute information about household equipment and appliances or clothing and household textiles are being dashed by the U. S. Department of Agriculture.

Now caught in a Congressional hassle, the Agricultural Research Service administrators had proposed to eliminate all research in these fields and redirect their efforts towards more concentrated information about food and nutrition.

On Feb. 25, Dr. Byron T. Shaw, administrator for the ARS, outlined the particulars of death for Government research into home economics.

Household Appliances

Dr. Shaw stated in a memorandum that "financial considerations make it impossible" for the Service to continue research in fields dealing with the care, selection and use of household appliances and textiles and clothing.

It has been learned, however, that pressures have been brought to bear on the ARS from both within the Department of Agriculture and from outside the Government to kill home economics studies, and step up research for foods and nutrition.

On April 26, Senator Paul Douglas (D-Ill.), in discussing the agricultural appropriation bill before the Senate, pointed up the possibility that curtailment of Government research would also mean a curtailment of Government popular publications about home economics.

Senator Douglas also said that he understood "that this curtailment largely grew out of an attack which General Eisenhower made during his campaign against a bulletin which the Department of Agriculture issued on the subject of how to wash dishes."

• RADIO

Saturday, June 4, 1955, 5:00-5:15 p.m., EDT
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Prof. A. Wiley Sherwood, wind tunnel manager, University of Maryland, and Mr. Paul Jung, chief experimental engineer at Trailmobile, Inc., will discuss "Streamlining Truck-trailers."

In December, 1953, two bulletins, "Home Freezers, Their Selection and Use," and "Washing Machines, Their Selection and Use," were ready for printing, and then withheld. No explanation was given, but political implications have been hinted. Both publications are now being readied for the printer and were "approved" for publication in April.

Dr. Shaw told SCIENCE SERVICE that all home economics publications are being brought up to date and will continue to be printed as long as they remain in demand and "up-to-date."

However, the public can expect no new information from new studies, simply because there will be no new studies, unless the Congress decides to change the situation.

Administration Policy

There can be little doubt that the Government has learned how-to-do-it when it comes to eliminating its own how-to-do-it books published for the public.

It is clear that the Government is slowly but deliberately pulling itself out of the middle-man role between scientific research and the public, leaving home owners and homemakers no choice but to get the information from private sources at higher prices.

Fortunately, the what-to-do books, published by the Health, Education and Welfare Department for mothers, including the Government Printing Office's best-seller, "Infant Care," have not been affected.

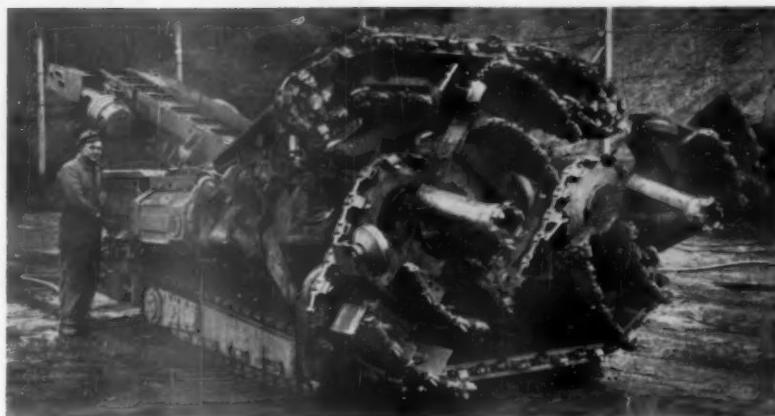
The Department of Interior, on the other hand, manages to lock the barn doors before the horse escapes by having a tight editorial policy. All manuscripts prepared by Interior researchers are carefully considered in the light of competition with private information available on the topic. If the field is well covered by private sources, the manuscript is shelved. If there is a need for the information, it is published.

A good deal of the popular publication "dry-up" in store for the public is being caused by the administration's new policy of taking Government out of competition with private industry.

Science News Letter, May 28, 1955

Forty-one percent of the pedestrians killed in traffic accidents in 1953 were crossing between intersections.

The *mormon cricket* is not a cricket at all, but a relative of the common katydid and meadow grasshopper.



FORTY-TON COAL MINER—This monster machine can chew eight tons a minute from a block of coal. Using two boring arms and top and bottom trim-cutting chains, it removes the full face of the coal seam in one operation. Made by the Joy Manufacturing Company and called the Twin Borer, its cutting pattern is 13 feet wide and from six to eight feet high.

INVENTION

Reactor Plans for 25c

► THE COMPLETE plans of the first nuclear reactor, including details which until very recently were top secret, can be bought from the Commissioner of Patents for 25 cents.

The first patent ever issued for the device that made use of atomic energy possible was granted to the late Dr. Enrico Fermi, Nobel Prize-winner, and Dr. Leo Szilard of the department of biophysics at the University of Chicago. They were awarded patent No. 2,708,656, assigned to the Atomic Energy Commission.

Drs. Fermi and Szilard originally filed application for a patent on the "neutronic reactor," on Dec. 19, 1944, nearly nine months before the atomic bomb was dropped on Hiroshima.

Containing 27 sheets of drawings and 30 sheets of printed matter, the reactor patent is comparable to a textbook on atomic energy. From it can be constructed a nuclear reactor similar to the first such device built at the University of Chicago, or the X-10 at Oak Ridge.

Drs. Fermi and Szilard's patent contains details, heretofore unpublished, concerning several facets of the nuclear reactor. Among these are:

An explanation of "danger coefficients," which are those factors that might be dangerous or inhibiting to the continuation of the chain reaction, necessary for fission.

Explanation of "exponential pile," that is, the geometry of the nuclear pile that must be constructed so that the neutron density declines exponentially with distance from the source. This is necessary, the inventors stated, to increase the neutron ratio above one, that is, produce more neutrons than are absorbed or wasted.

The method for calculating the size of the pile.

Another method of calculating pile design.

The design for a specific reactor, with a solid moderator.

Another design with a liquid moderator.

Still another design with a beryllium moderator.

In their ten-and-one-half-year-old application, Drs. Fermi and Szilard stated, "we have discovered certain essential principles required for the successful construction and operation of self-sustaining neutron chain reacting systems (known as neutronic reactors) with the production of power in the form of heat."

In concluding the description of their invention, the eminent atomic scientists made known the scientific potentialities of such a reactor or reactors and said, "with modifications, the reactors herein described can also be used as sources of power in useful form."

Science News Letter, May 28, 1955

BOTANY

Grow "Wall Flowers" in California Experiments

► THEY ARE growing "wall flowers" now in California.

This is a research project of Austin Enright, a horticulturist at the University of California at Los Angeles, who is growing orchid plants on redwood boards.

The boards are arranged in a clapboard effect on a vertical frame. Water and necessary minerals trickle down the boards from an overhead pipe, keeping the boards moist.

Redwood is used because it resists rot.

The orchid plants are stapled to the boards and tied to a nail to hold them erect. Roots run along the surface of the boards.

At the present time approximately 48 plants are putting out new growth and look healthy. But the final verdict on the success of the method awaits the blooms scheduled for next Christmas.

If successful, the technique may be a boon to the sagging orchid industry. Strapless gowns and other factors have decreased the demand for orchid corsages. The cost of producing quality flowers is still high due to the constant care that must be lavished upon the rare flowers under present techniques.

These involve constant repotting in an expensive medium from the Florida everglades known as osmunda. The redwood board method eliminates the osmunda and repotting. It also solves space problems by its vertical arrangement, and may enable growers to produce six times as many plants in the space now required by conventional growing methods.

Science News Letter, May 28, 1955

MEDICINE

Floating Cancer Cells Give Research Tool

► CANCER CELLS floating in the fluid accumulated in the chest and abdomen in one kind of cancer are giving scientists a tool for studying the genetics of cancer cells and the effects of various chemicals on cancer cells.

The cells used in this research come from a mouse cancer called the Ehrlich ascites tumor.

This phenomenon is an association of two disease conditions, Dr. Horace Goldie of Meharry Medical College, Nashville, Tenn., explained at a New York Academy of Sciences Conference in New York.

The two conditions are: 1. ascites, or fluid accumulation, due to implantation of tumor cells into the lining of the abdomen; 2. growth of the tumor cells in the fluid.

When the cells are implanted in the abdominal lining, fluid leaks from the tiny blood vessels in this lining tissue faster than it can be removed by lymph vessels and veins.

The leakage of fluid can be considerably decreased by chemicals or other agents affecting the small blood vessels called capillaries. It can be increased by blocking the lymph and blood vessels responsible for fluid drainage.

The volume of fluid, therefore, can be considered as a reflection of tumor cell growth only in its early stage and only in untreated mice.

In the ascites tumors, Dr. Goldie concludes from his research, growth of free malignant cells and their spread are inseparably associated. Both are suitable as test objects for investigating, on quantitative lines, the mechanism of malignant, or cancerous, conditions and the effect of various agents on malignant cells.

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D.C. Request free publications direct from publisher, not from Science Service.

THE ARCHAEOLOGICAL AND PALEONTOLOGICAL SALVAGE PROGRAM IN THE MISSOURI BASIN, 1950-1951—Paul L. Cooper—*Smithsonian, Miscellaneous Collections*, Volume 126, Number 2, 99 p., illus., paper, \$1.35. Only three of the hundreds of earth-lodge villages to be lost in the Oahe Reservoir had been at all extensively excavated by the end of 1951, but fortunately reconnaissance of a large number of reservoirs showed that a number of projects result in no archaeological loss.

THE BOOK OF MODERN PUZZLES—Gerald Lynton Kaufman—*Dover*, 2d rev. ed., 188 p., illus., cloth \$2.50, paper \$1.00. Word puzzles and puzzles involving logic.

CHILD DEVELOPMENT—Millie Almy—*Holt*, 490 p., illus., \$4.50. The principles of child development are here illustrated with accounts of actual child behavior drawn from the author's experience.

CO-ORDINATION OF GALACTIC RESEARCH—A. Blaauw, Ed.—*Cambridge University Press*, 59 p., \$1.50. Report of an international conference.

CRYPTOGRAPHY: The Science of Secret Writing—Laurence Dwight Smith—*Dover*, 164 p., illus., cloth \$2.50, paper \$1.00. Those who delight in puzzles can find much to ponder on here.

ELEMENTS OF PHYSICS: For Students of Science and Engineering—George Shortley and Dudley Williams—*Prentice-Hall*, 2d ed., 880 p., illus., \$10.60. An introductory text for the student who is taking a concurrent course in calculus.

ENEMY WAY MUSIC: A Study of Social and Esthetic Values as Seen in Navaho Music—Reports of the Rimrock Project Values Series No. 3—David P. McAllester—*Peabody Museum*, Papers, Vol. XLI, No. 3, 92 p., illus., paper, \$2.65. Exploring cultural values through an analysis of attitudes toward music as well as through an analysis of the music itself.

THE FACTS OF LIFE—C. D. Darlington—*Macmillan*, 467 p., illus., \$7.00. The intention of the author is to "show the immense possibilities which await the application of the elementary principles of heredity to the great problems of society."

FLOWER ARRANGEMENT WORKBOOK 3—Myra J. Brooks—*Barrows*, 64 p., illus., \$2.50. To help the hobbyist prepare to exhibit her work in flower shows.

FUNDAMENTAL FORMULAS OF PHYSICS—Donald H. Menzel, Ed.—*Prentice-Hall*, 765 p., \$13.50. Intended to fill the indicated need for a comprehensive reference book containing fundamental formulas not only of physics but of other special fields where physics touches on them.

THE GIFTED STUDENT AS FUTURE SCIENTIST: The High School Student and His Commitment to Science—Paul F. Brandwein—*Harcourt, Brace*, 107 p., \$2.00. Telling how to locate scientific talent among high school students and how to stimulate their development. Attention is given to the National Science Talent Search and the National Science Fair.

A GUIDE TO GARDENING WITH YOUNG PEOPLE—Richard R. Kinney—*Prentice-Hall*, 210 p., illus., \$3.25. Giving boys and girls their own gardening book and, incidentally, providing help to the rank beginner among suburban backyard gardeners.

THE HYPOPHYSEAL GROWTH HORMONE, NATURE AND ACTIONS: International Symposium—Richmond W. Smith Jr., Oliver H. Gaebler and C. N. H. Long, Eds.—*McGraw-Hill*, 576 p., illus., \$12.00. Reporting a symposium attended by 300 scientists on this most elusive of the pituitary hormones.

INFANT CARE—Marion L. Faegre—*Govt. Printing Office*, rev. ed., 106 p., illus., paper, 15 cents. A new revised edition of this government best-seller.

INTRODUCTION TO PHYSICS—Frank M. Durbin—*Prentice-Hall*, 780 p., illus., \$9.00. Introductory college text. An attempt has been made to get around to the treatment of modern physics before the end of the spring semester looms in sight.

LEUKOCYTIC FUNCTIONS—Albert S. Gordon, John W. Rebuck, and Robert S. Speirs, Conference co-chairmen—*New York Academy of Sciences, Annals*, Volume 59, Art. 5, 405 p., illus., paper, \$4.50. Papers contributed to the conference.

MATHEMATICAL PUZZLES FOR BEGINNERS AND ENTHUSIASTS—Geoffrey Mott-Smith—*Dover*, 2d rev. ed., 248 p., illus., cloth \$2.50, paper \$1.00. Puzzles with solutions for the beginner with knowledge only of elementary arithmetic as well as the trained mathematician who likes brain teasers.

NAVAHO ACQUISITIVE VALUES: Reports of the Rimrock Project Values Series No. 5—Richard Hobson—*Peabody Museum*, Papers, Vol. XLII, No. 3, 34 p., paper, \$1.10. For a pastoral people, the Navahos have a surprising interest in making money and saving it and a terrible fear of being poor.

POINT LOBOS RESERVE: Interpretation of a Primitive Landscape—Aubrey Drury, Ed.—*Printing Division, California*, 96 p., illus., paper, \$1.00. A rocky promontory on the Pacific three miles south of Carmel, Calif., this point is an area of rare natural beauty and exceptional scientific interest.

THE PYRAMIDELLID MOLLUSKS OF THE PLIOCENE DEPOSITS OF NORTH ST. PETERSBURG, FLORIDA—Paul Bartsch—*Smithsonian, Miscellaneous Collections*, Volume 125, Number 2, 102 p., illus., paper, \$1.40. This fauna in Florida has been "almost completely neglected, owing evidently to the inconspicuous size of its members."

SEEDS OF LIFE: The Story of Sex in Nature from the Amoeba to Man—John Longdon-Davies—*Devin-Adair*, 172 p., \$3.00. A newspaper science writer presents this book on a topic of universal interest.

SIXTY-YEAR WEATHER FORECASTS—C. G. Abbot—*Smithsonian, Miscellaneous Collections*, Volume 128, Number 3, 22 p., illus., paper, 25 cents. The author is convinced that by employing cycles it is possible to make 60-year forecasts that give high correlations with events.

SOIL FREEZING—E. J. Yoder and others—*Highway Research Board*, Bulletin 100, 35 p., illus., paper, 60 cents. Reporting studies related to highway maintenance.

STEINMETZ: Maker of Lightning—Sigmund A. Lavine—*Dodd, Mead*, 241 p., illus., \$3.00. The biography of an inventive genius.

STRANGE CREATURES OF THE SEA—A. Hyatt

Verrill—*Page*, 233 p., illus., \$3.75. Curious facts about interesting creatures.

TRUANTS FROM LIFE: The Rehabilitation of Emotionally Disturbed Children—Bruno Bettelheim—*Free Press*, 511 p., illus., \$6.00. Another book about the Orthogenic School. This set of four case histories shows how this special school offers emotionally ill children the opportunity to build a normal life.

THE VIKING ROCKET STORY—Milton W. Rosen—*Harper*, 242 p., illus., \$3.75. The story of a series of research rockets as seen through the eyes and lives of the men responsible for their creation.

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STATISTICS

Population of U. S. Rapidly Growing Older

► THE UNITED States has one of the oldest populations of the world and we are rapidly growing older.

Our rapid change from a youthful nation to one with large numbers of the aged is revealed by figures published by the Population Reference Bureau, Inc.

The United Kingdom and some other northern European nations have even older populations. In the United Kingdom, 22% of the population are children under 15 while 16% are 60 years old or older. For the United States the figures are 27% children and 12% aged.

In colonial times, we had 40% under 15 and only four to six percent over 60.

Today, the countries with youthful populations are the underdeveloped countries in Asia, Africa and Latin America. There the proportions of children and aged are similar to those in the U. S. in colonial times.

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Questions

ASTRONOMY—What is the greatest theoretical length for a solar eclipse? p. 346.

□ □ □

ENTOMOLOGY—Why is a cockroach so hardy? p. 347.

□ □ □

GEOPHYSICS—How can reliable radio propagation be accomplished over long distances? p. 339.

□ □ □

PSYCHIATRY—What is a "dry drunk?" p. 338.

□ □ □

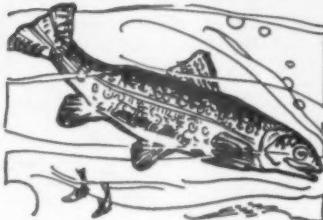
MEDICINE—How is hypnotism used to treat burns? p. 351.

□ □ □

Photographs: Cover, pp. 341 and 343, Bernard Noble; p. 339, Carl Byoir and Associates, Inc.; p. 349, M. K. Mellon Co.; p. 352, Eastman Chemical Products, Inc.

ICHTHYOLOGY

NATURE RAMBLINGS



Trout

► WHIRRRRRRRRR! THE reel sings out, the rod's tip bends, a silver flash, another, another—the battle is on, Trout versus Angler. And may the better wit and the greater alertness, by no means definitely the Angler's, win the day.

For the time has come when the city dweller who is not too far from where swift, cold water flows will take a day on his week-end to slip out and try his luck with a rod in his favorite stream. And in a multitude of other places, the sons of Izaak Walton are piously conning their breviaries—to wit, their fly-hooks—and counting the days until they get their summer vacations.

Of all the finny gods in their calendar,

MEDICINE

Hypnotism for Burns

► HYPNOTISM CAN be used to speed recovery of severely burned patients, a five-man team of psychiatrists and surgeons at the University of Texas Southwestern Medical School, Dallas, reported to the *Journal of the American Medical Association* (May 14).

Patients who were slowly starving because they had lost all appetite ate voraciously, consuming up to 8,250 calories a day, after hypnotic suggestion that they would be hungry and crave food. They even selected the particular foods that doctors consider most important for aiding recovery from burns, though in some cases they had disliked the foods even before they were burned.

Instead of begging for drugs to relieve pain, they were able to stand skin grafting operations without anesthetics while under hypnosis.

They felt better, exercised fingers and hands to help prevent crippling contractures, and began getting out of bed and doing things for themselves.

As a result, apparently of the increased food consumption, skin grafts took and

they bow lowest, and most frequently, before the image of the trout. The bass may run him close, and the vicious pike or muskellunge claim devotion in moments of craving for a big fight with heavy weapons. But, in the end, the True Believer returns to the trout.

Slim and beautiful whether in the water or safely landed, swift with a speed that would seem to belong properly only to the birds of the air, water-wise and hook-wise with an intelligence that seems a shade supernatural in a mere fish, he is the prince and primate of all things that live in fresh water.

The various species of trout, home-biding fellows for all their adventurous disposition, have wandering brothers in the salmon. The salmon most sought after as game fish, indeed, are placed by naturalists in the same genus with trout, who even give them their own scientific name, "Salmo."

The big salmon of the commercial fisheries are also rated as close relatives, but ranked in a separate genus.

Even though it does not dwell permanently in fresh water, the trout can on occasion do some vigorous traveling on his own account. The Yellowstone trout used to be a good deal of a puzzle, because it was found in the headwaters of the Snake River which drains to the Pacific, and also in Yellowstone Lake, on the Atlantic side of the divide. But the divide between the lake and upper rills of the river is in places a flat, wet meadow, and here in rainy seasons trout have actually been seen working their way over "the top of the world" through shallow pools.

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the burns healed better.

One patient, bedridden for 18 months and going downhill, was discharged from the hospital walking and with nearly all his wounds healed 12 weeks after hypnosis was started.

While some patients are not amenable to hypnosis, there would be few such, the doctors think, among burned patients. They are so miserable and in such pain that they are ready to cooperate in the experiment that offers relief from their suffering and may speed their recovery.

The time involved in the hypnotic treatment is not great and resident and attending surgeons and resident anesthesiologists can quickly learn the techniques so as to reinforce the hypnosis daily.

The good results with this method of helping burned patients are reported by Drs. Harold B. Crasilneck, Jerry A. Stirman, Ben J. Wilson, Erasmus J. McCranie and Morris J. Fogelman.

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About three percent of all sea water is ordinary salt, sodium chloride.

METALLURGY

New Aluminum Alloy Stands Intense Heat

► METALLURGISTS HAVE pushed back the thermal barrier for aluminum with a new high temperature alloy that promises to improve the performance of supersonic jets.

The alloy, called X2219, offers excellent properties for aircraft at temperatures up to 600 degrees Fahrenheit, the Aluminum Company of America disclosed. Along with other pending alloy developments, the new metal is expected to raise the temperature limits on aluminum.

Continued use of ordinary aluminum in some parts of supersonic jets has been threatened by undesirable properties of previously available alloys at the high temperatures generated in such speedy flight.

X2219's properties are expected to make it valuable for use in and near aircraft and automobile engines.

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PSYCHIATRY

Mental Patients Living Longer, Study Shows

► MENTAL HOSPITAL patients are living longer nowadays, just as does the population as a whole. The increase in longevity in both cases is due to control over infectious and other diseases, statisticians of the Metropolitan Life Insurance Company stated.

Those who recover from their mental sickness also have a favorable outlook for a long life. Applicants for life insurance who had recovered from a psychoneurosis of relatively mild degree had a survivorship rate of 99.1% five years after they were insured and of 97.3% ten years after they were insured. These figures are from a study covering the experience of a large number of life insurance companies during the period 1935-1950. The insured were mostly men diagnosed as having psychoneurosis in connection with military service.

These survival rates were only slightly less than those for standard risks as a whole.

Even for applicants with a history of mental illness of severe degree, who naturally were selected with great care, survival after recovery compared not too unfavorably with standard risks.

At the end of 15 years the proportion surviving among those with severe psychoneurosis or psychosis was 88.8% compared with 93.1% among standard risks as a whole. The results indicated that the excess mortality among patients with a history of mental disorders is no greater than that resulting from many types of physical impairments.

Suicide accounted for a large part of the excess mortality among them. For most other causes of death, their mortality was not significantly different from that among standard risks.

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• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE SERVICE, 1719 N St., N.W., Washington 6, D.C., and ask for Gadget Bulletin 780. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

SHOWER CURTAIN attachment of aluminum transforms an ordinary shower curtain into a shower door. The do-it-yourself kit contains complete instructions. Curtain material is fitted to aluminum moldings and plastic cord. Handles are placed at either end and wall locks insure watertight showering.

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AUTOMATIC HEADLIGHT dimmer eliminates flickering and forgetting to return to upper beam after dimming. The photoelectric circuit and power supply are contained in a metal case for mounting on the instrument panel inside the car. Wired into the auto's headlight system, the infrared responsive dimmer also operates from the tail lights of a car close ahead.

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DYNAMO FLASHLIGHT is hand generated and needs no batteries or extra parts to operate. Imported from Germany, the hand lever is squeezed and produces a light that penetrates ten feet in darkness. Small enough for the glove compartment of a car, the flashlight comes in a metal case and has a magnifying lens.

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MAGNETIC FISHHOOK holder fastens onto a jacket or hat, making flies and



lures readily available. Made of a tough butyrate plastic and equipped with a pin and safety catch, a magnetic assembly, shown in the photograph, holds the baits. The holder takes eight flies or lures and permits rapid drying.

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ROLLING CRUTCH can be useful to persons recuperating from an injury suffered below the knee. Made of aluminum tubing, the rolling aid is a low frame structure supporting a sling at knee height. It is small and light enough to be carried in an automobile.

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TURBINE LAWN sprinkler has a spinner head molded of a corrosion-resistant red butyrate plastic. The runner-type base is painted green and is cast iron. When the water is turned on, the sprinkler, which requires no lubrication, sends a rain over a circle of from four to 30 feet in diameter.

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CASEMENT CLOTH for curtains and drapes is fire-resistant. Available in a wide range of colors, the new material is a combination of three man-made fibers. Eliminating special flame-proofing treatment, the new fabric can be washed or dry-cleaned and needs little or no pressing.

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PORTABLE TELEVISION set is a full-power 17-inch model that weighs less than 40 pounds and can be used in the home or wherever 110-125V AC is available. Both cabinet and chassis are made of aluminum.

Science News Letter, May 28, 1955

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Do You Know?

There are an estimated 22,600,000 dogs in the United States.

The orange is known to have 150 different chemical constituents.

The polar bear is such a good swimmer that it has been seen over 200 miles from land in the open sea.

The extinct moa of New Zealand was much larger than the ostrich, and is believed to have weighed as much as 500 pounds.

The first framed timber bridge in the United States was Col. Enoch Hale's bridge over the Connecticut River, built in 1785.

Forty million Americans now living will at some time in their lives have cancer if the present incidence of the disease continues, it is estimated.

A four-inch white line containing reflecting beads is being tried out on the edges of roads in Maryland as an added safety measure for automobile drivers.